



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Northwest Region

7600 Sand Point Way N.E., Bldg. 1

Seattle, WA 98115

Refer to:

OSB1999-0266

September 28, 1999

Karen Kochenbach
U.S. Army Corps of Engineers
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, OR 97208-2946

Re: Consultation on the Effects of Aggregate Excavation in the Lower Rogue and Chetco Rivers
(Permit ID Nos. 96-1565 and 96-1804) on Southern Oregon/Northern California Coho
Salmon

Dear Ms. Kochenbach:

This concludes our formal consultation regarding the effects on Southern Oregon/Northern California (SONC) coho salmon from issuance of Section 404 and Section 10 permits to excavate aggregate from gravel bars on the lower Rogue (Permit ID No. 96-1565) and Chetco (Permit ID No. 96-1804) Rivers, in Curry County, Oregon. The permit applicants (Eagle Cap Rentals and Tidewater Contractors, respectively) propose to conduct the actions for a three-year period, beginning in the autumn of 1999.

The SONC coho salmon was listed by the National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA) as threatened on May 6, 1997 (62 FR 42588). Critical habitat for SONC coho salmon was designated by the NMFS on May 5, 1999 (64 FR 24049). The Southern Oregon/Coastal California chinook salmon was proposed for listing under the ESA on March 9, 1998 (63 FR 11482), but new information led the NMFS to conclude on September 16, 1999 (64 FR 50394) that the proposed evolutionarily significant unit (ESU) was in fact composed of two separate ESUs. The NMFS further concluded that the newly-delineated ESU relevant to this consultation, the Southern Oregon/Northern California Coast (SONCC) chinook salmon, does not currently warrant listing under the ESA. Klamath Mountain Province steelhead (KMP steelhead) was determined to not warrant listing under the ESA by NMFS (March 19, 1998, 63 FR 13347). The NMFS determined that the Southern Oregon/Coastal California cutthroat trout (SOCC cutthroat) does not warrant listing under the ESA on April 5, 1999 (64 FR 16397). All four species of anadromous salmonids described above occur in the Rogue and Chetco rivers of southwestern Oregon and northern California. This consultation is undertaken pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR Part 402.



In a letter dated January 13, 1999, the Portland District of the U.S. Army Corps of Engineers (COE) requested formal consultation on the effect of the application of Eagle Cap Rentals to excavate aggregate material from a Rogue River gravel bar near Wedderburn, Curry County,

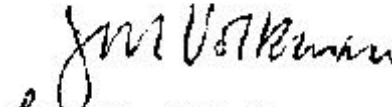
Oregon on SONC coho salmon, SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout. In a letter dated January 14, 1999, the COE requested formal consultation on the effect of the application of Tidewater Contractors to excavate aggregate material from a Chetco River gravel bar near Brookings, Curry County, Oregon on the same four species of anadromous salmonids. The applications were submitted under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, which the COE administers. The applicants propose to remove annually, with heavy machinery, approximately 100,000 cubic yards (cy) of sand and gravel from the Rogue River bar at river mile (RM) 2.2 and approximately 100,000 cy of sand and gravel from the Chetco River bar (RM 2.0) for the three-year life of the proposed permits.

Attached to the COE's consultation initiation letters were the Public Notice for Permit Applications (dated December 17, 1996, and January 11, 1999, for the Chetco and Rogue projects, respectively) and biological assessments for the projects. NMFS and COE staff also attended site visits at the project sites on March 9, 1999, where the projects were discussed with representatives of the applicants, the Oregon Department of Fish and Wildlife, and the Oregon Division of State Lands. Based on the site visit discussions, the COE proposed modifications to the original Rogue River proposal in a March 16, 1999, memorandum.

In an electronic mail message dated August 2, 1999, and two facsimile memoranda dated August 12, 1999, the COE modified its proposed conditions for the applicants' operation on both the Rogue and Chetco rivers to require that a berm or other structure be constructed and maintained around the aggregate excavation areas to bar access to these areas by fish and other aquatic organisms during active excavation periods.

Enclosed is the Biological Opinion on the COE's issuance of Section 404 and Section 10 permits to the applicants, authorizing the incidental take of SONC coho salmon, provided that the terms and conditions of the incidental take statement are met. The attached document also serves as a Conference Opinion on the effects of the actions on SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout. If you have any questions regarding this opinion, please contact Dan Kenney, Fishery Biologist, of my staff in the Oregon State Branch Office at (541) 957-3385.

Sincerely,


for William Stelle, Jr.
Regional Administrator

cc: Mike McCabe, Oregon Division of State Lands
Todd Confer, Oregon Department of Fish and Wildlife
Steve Wille, U.S. Fish and Wildlife Service
Becky Crockett, Montgomery Watson

Endangered Species Act - Section 7
Consultation

BIOLOGICAL OPINION

Effects of Aggregate Excavation (Permit ID Nos. 96-1565
and 96-1804) in the Lower Rogue and Chetco Rivers on
Southern Oregon/Northern California Coho Salmon

Agency: Portland District, U.S. Army Corps of Engineers

Consultation Conducted By: National Marine Fisheries
Service, Northwest Region

Date Issued: September 28, 1999

Refer to: OSB1999-0266

TABLE OF CONTENTS

I.	Background	1
II.	Proposed Action	2
III.	Biological Information and Critical Habitat	4
IV.	Evaluating Proposed Actions	6
	A. Biological Requirements and Current Status	6
	B. Environmental Baseline	7
V.	Analysis of Effects	7
	A. Effects of Proposed Action	7
	B. Effects of Interrelated and Interdependent Actions	12
	C. Cumulative Effects	12
VI.	Conclusion	13
VII.	Conservation Recommendation	13
VIII.	Reinitiation of Consultation	14
IX.	References	14
X.	Incidental Take Statement	16
	A. Amount or Extent of the Take	16
	B. Reasonable and Prudent Measures	17
	C. Terms and Conditions	17

I. Background

The Southern Oregon/Northern California (SONC) coho salmon (*Oncorhynchus kisutch*) has been listed as threatened under the Endangered Species Act (ESA) by the National Marine Fisheries Service (NMFS) (May 6, 1997, 62 FR 42588). Critical habitat for SONC coho salmon was designated by the NMFS on May 5, 1999 (64 FR 24049). The Southern Oregon/Coastal California chinook salmon (*O. tshawytscha*) was proposed for listing under the ESA on March 9, 1998 (63 FR 11482), but new information led the NMFS to conclude on September 16, 1999 (64 FR 50394) that the proposed evolutionarily significant unit (ESU) was in fact composed of two separate ESUs. The NMFS further concluded that the newly-delineated ESU relevant to this consultation, the Southern Oregon/Northern California Coast (SONCC) chinook salmon, does not currently warrant listing under the ESA. Klamath Mountain Province (KMP) steelhead (*O. mykiss*) was determined to not warrant listing under the ESA by NMFS (March 19, 1998, 63 FR 13347). The NMFS determined that the Southern Oregon/Coastal California (SOCC) cutthroat trout (*O. clarki*) does not warrant listing under the ESA on April 5, 1999 (64 FR 16397). All four species of anadromous salmonids described above occur in the Rogue and Chetco rivers of southwestern Oregon and northern California.

In a letter dated January 13, 1999, the Portland District of the U.S. Army Corps of Engineers (COE) requested formal consultation on the effect of the application (COE No. 96-1565) of Eagle Cap Rentals to excavate aggregate material from a Rogue River gravel bar near Wedderburn, Curry County, Oregon on SONC coho salmon, SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout. In a letter dated January 14, 1999, the COE requested formal consultation on the effect of the application (COE No. 96-1804) of Tidewater Contractors (Tidewater) to excavate aggregate material from a Chetco River gravel bar near Brookings, Curry County, Oregon on the same four species of anadromous salmonids. Eagle Cap Rentals is affiliated with Tidewater and the two businesses will be referred to as Tidewater in this document. Tidewater submitted the applications under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, which the COE administers. Tidewater proposes to remove annually, with heavy machinery, approximately 100,000 cubic yards (cy) of sand and gravel from the Rogue River bar at river mile (RM) 2.2 and approximately 100,000 cy of sand and gravel from the Chetco River bar at RM 2.0, for a total of 600,000 cy of aggregate over the three-year life of the proposed permit. At the Rogue River site, Tidewater proposes to excavate 18-foot deep trenches perpendicular to the river flow, each about 75 feet wide by 150 to 200 feet in length, on one portion of the bar and to scalp (i.e., remove a shallower portion of aggregate, about 5 feet deep in this case, but over a broader area) another portion of the bar. Aggregate excavation is proposed to occur from October 1 through May 31.

Attached to the COE's consultation initiation letters were the Public Notice for Permit Applications (dated December 17, 1996, and January 11, 1999, for the Chetco and Rogue projects, respectively) which described the proposed actions, and biological assessments (BAs) prepared by Tidewater's consultant which described the effects of the proposed actions on anadromous salmonids. NMFS and COE staff also visited the project sites on March 9, 1999, where the projects were discussed with

personnel from Tidewater, the Oregon Department of Fish and Wildlife (ODFW), and the Oregon Division of State Lands. Based on the site visit discussions, the COE proposed modifications to the original Rogue River proposal in a March 16, 1999, memorandum.

In an electronic mail message dated August 2, 1999, and two facsimile memoranda dated August 12, 1999, the COE modified its proposed conditions for the Tidewater's operation on both the Rogue and Chetco rivers to require that a berm or other structure be constructed and maintained around the aggregate excavation areas to bar access to these areas by fish and other aquatic organisms during active excavation periods.

The objective of this biological opinion is to determine whether the aggregate excavation and associated activities proposed by Tidewater are likely to jeopardize the continued existence of SONC coho salmon, listed as threatened under the ESA, or result in destruction or adverse modification of designated critical habitat for this species. In addition, this document is a conference opinion on the effects of the proposed activities on SONCC chinook salmon and SONCC chinook salmon proposed critical habitat, and discusses the potential effects of the activities on KMP steelhead and SOCC cutthroat trout and their habitat. Although NMFS expects some effects to individual fish and their habitat from these actions, the effects to SONC coho salmon, SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout essential habitat are expected to be minor because of project design and location. Adverse effects to individuals of these species are expected to be rare because of project design, location, and reasonable and prudent measures to be taken by Tidewater. As part of the NMFS' terms and conditions of this biological opinion, river channel geomorphology and level of direct take will be monitored, which will provide a more complete assessment of baseline conditions and project effects for future permitting decisions.

II. Proposed Action

The proposed action is issuance of individual permits under Section 404(b)(1) of the Clean Water Act. The permits would allow Tidewater to annually excavate up to 100,000 cubic yards (cy) of sand and gravel (aggregate) from the bar at Rogue River mile 2.2, and approximately 100,000 cy of aggregate from the bar at Chetco River mile 2.0, for a total of 600,000 cy of aggregate over the three-year life of the proposed permit. A small portion of the Rogue River bar and nearly all of the Chetco River bar to be excavated are currently inundated by tidal flows twice daily, but are above the surface of the rivers during low and moderate tides at low to moderate river flow volume. Aggregate excavation is currently proposed to occur from October 1 through May 31.

At the Rogue River site, Tidewater proposes two different excavation methods. On the southern-most portion of the bar is a section approximately 1,000 feet long and 500 feet wide which is typically not inundated by tides, but is covered by water at high river flows. This area is separated from the main portion of the bar by an inundated channel (about 50 to 75 feet in width) at high and moderate tides (even at low river flow levels), but the channel is exposed at low tide levels for about four hours per day. Tidewater proposes to annually scalp up to 5 feet of aggregate from a 150- by 500-foot portion

of this “island” section of the bar from about 6 feet above mean lower low water (MLLW) to roughly 1 foot above MLLW. Tidewater would leave a minimum buffer strip of 50 feet in width around the perimeter of the island (the contour defining the MLLW elevation). Excavation and hauling equipment would access the “island” at low tide from the main (northern) portion of the bar.

On the main portion of the Rogue River bar, which is about 2,500 feet long by 1,000 feet wide, Tidewater would excavate trenches perpendicular to the river flow, each about 75 feet wide by 150 to 200 feet in length. Only the southernmost few feet of this portion of this bar area is inundated twice daily by tides, but the entire proposed excavation area is covered by water at high river flow volumes. Tidewater would annually excavate one or more of these trenches, from about 6 feet above MLLW to about 12 feet below MLLW. Each trench would be separated from the next by a minimum of 75 feet, and Tidewater would leave a minimum buffer strip of 50 feet in width around the southern edge of this bar area with the MLLW contour defining the edge. Tidewater has been conducting similar amounts of annual excavation at the Rogue River site for approximately two decades—although the aggregate extraction from the northern area has previously been by scalping or a large pit, rather than from the proposed trenches.

At the Chetco River site, Tidewater proposes to excavate a trench or pit approximately 500 feet in length by 100 feet in width on a bar (itself about 800 by 200 feet) on the south side of the Chetco River. The pit would be excavated to a depth of about 14 feet below MLLW, and Tidewater would provide a minimum buffer strip of 50 feet in width along the northern edge of the bar area with the MLLW contour defining the edge. The entire bar is often inundated at high tides and at high river flow levels.

Under the COE’s most recent proposed permit condition, Tidewater would be required to isolate active trenches and scalping areas from tidal inundation. It is likely that gravel berms would be raised by Tidewater to implement this condition. Such berms would be infiltrated by water from rising tides, but would not be overtopped, and so would prevent fish from gaining access to the excavation areas.

At both the Rogue and Chetco river sites, Tidewater would use tracked mechanical excavators or rubber-tired front-end loaders to remove the aggregate from the bars and trucks to move the aggregate from the bars to adjacent upland storage sites. The COE proposes to require Tidewater to construct escape channels or breaches at the upstream and downstream ends of the Rogue and Chetco river pit/trenches at the end of the excavation season (May) to allow egress by fish that would otherwise be trapped in the pits as water elevation drops from tides and/or reduced river flows. The “island” scalping area at the Rogue site would be graded flat at the end of the excavation to prevent fish trapping.

III. Biological Information and Critical Habitat

Both the Rogue and Chetco river watersheds supports runs of SONC coho salmon, SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout. NMFS (1997b), Weitkamp *et al.* (1995), Myers

et al. (1998), Busby *et al.* (1996), and Johnson *et al.* (1999) provide detailed information on the life history, distribution, and abundance of these species, but some site specific information is provided below.

The Rogue River is a major producer of SONC coho salmon, while the Chetco River coho run is relatively small; both the Rogue and Chetco coho runs are likely much reduced compared to historical abundance, but it is not known whether the Chetco River has ever produced large numbers of coho salmon. Adult SONC coho salmon enter the mouth of the Rogue River mostly in September and October (ODFW 1991), but the run likely extends through December or January; adult coho run timing in the Chetco River likely begins later because of its shorter length. Spawning typically occurs in Rogue and Chetco tributaries rather than in the mainstem of either stream. Juvenile coho salmon in southwestern Oregon typically rear in their natal streams until the spring of their second year, when they outmigrate as smolts to the Pacific Ocean (Weitkamp *et al.* 1995). A few juvenile coho are thought to outmigrate before the typical age, but few individuals with this life-history are likely to survive to adulthood. Rogue River basin SONC coho salmon smolts typically outmigrate from mid-April through mid-July, with a peak in June (ODFW 1991); similar outmigration timing should occur in the Chetco River. Although juvenile coho salmon are known to rear in large, diverse estuaries such as Coos Bay, it is likely that little juvenile coho rearing occurs in the Rogue and Chetco estuaries, because of their relatively small size and simplified habitat (Tom Nicholson, Fishery Research Biologist, ODFW, pers. comm., September 23, 1999).

SONCC chinook salmon are relatively more abundant in the Rogue and Chetco Rivers than SONC coho salmon, but chinook abundance is also thought to be substantially less than historically. The Rogue River supports runs of both spring and fall chinook salmon while only the fall-run form inhabits the Chetco River. Spring chinook salmon enter the Rogue River from March through July while fall chinook enter the Rogue from August to January and the Chetco from September through January. SONCC chinook salmon spawn in both the mainstem Rogue and Chetco Rivers and some of their tributaries, although not in the tidal areas which are the subject of this biological opinion. Unlike the other species of anadromous salmonids discussed here, juvenile chinook salmon in southwestern Oregon typically outmigrate to the estuaries and then to the ocean in their first year of life. Mean date of ocean entry for juvenile fall chinook salmon in the Rogue River for the 1972-81 brood years was in August or September (ODFW 1992), but juvenile chinook may migrate into or through the estuary from late Spring through late Fall. Many juvenile chinook salmon likely rear in both the Rogue and Chetco River estuaries for a few weeks to several months prior to ocean entry.

Both the Rogue and Chetco Rivers support substantial KMP steelhead runs, although the Rogue has a much larger drainage basin and a correspondingly larger steelhead population; however, as with other anadromous salmonids in southwestern Oregon, the number of steelhead in both basins is believed to be much reduced. Both summer- and winter-run steelhead inhabit the Rogue River basin, while the Chetco River is believed to support only the winter-run. Unlike coho and chinook salmon, steelhead do not necessarily die soon after spawning, and may make three or more spawning runs as adults. In addition, in the Rogue, Klamath, and a few other rivers in southwest Oregon and northern California (but probably not the Chetco), “half-pounder” steelhead (typically immature) which have spent a few

months in saltwater sometimes re-enter freshwater and overwinter before returning to the ocean (Busby *et al.* 1994). Adult summer-run steelhead enter the Rogue River from May through October (ODFW 1994), while adult winter-run steelhead enter the Rogue and Chetco Rivers from November through March (ODFW 1990). KMP steelhead spawning typically occurs in Rogue and Chetco tributaries and or upper mainstems, but not in the estuaries where the proposed actions would take place. Juvenile steelhead in southwestern Oregon typically rear in their natal streams and/or the Rogue and Chetco mainstem (including the estuaries) for two or three years (Busby *et al.* 1994) before outmigrating to the ocean in the spring or early summer.

Sea-run cutthroat trout inhabit both the Rogue and Chetco River basins, although little is known about their current or former abundance. The SOCC cutthroat trout ESU consists of resident, potamodromous, and anadromous life histories. Individuals of the potamodromous and anadromous forms have the potential to inhabit the lower Rogue and Chetco Rivers in the vicinity of the proposed aggregate excavation sites. Spawning by anadromous cutthroat trout typically occurs in small tributary streams, but the mainstems and estuaries of the Rogue and Chetco is used as a migration corridor by both adult and juvenile SOCC cutthroat trout. Adult anadromous cutthroat trout migrate upstream from June through November in the Umpqua River, and from July through December in the Klamath River, so similar timing is likely in the Rogue and Chetco. In the Rogue River, juvenile cutthroat trout typically outmigrate as smolts from their natal streams in the spring of their second or third year (Johnson *et al.* 1999). When suitable habitat is available, anadromous cutthroat trout parr utilize large streams and rivers before smolting (Lowry 1965, Giger 1972, and Sumner 1972), so the lower Rogue and Chetco Rivers are likely used as a rearing area by juvenile cutthroat trout. Additionally, adult anadromous cutthroat trout are known to feed in the estuaries and tidal areas of some streams, both before and during spawning migrations (Trotter 1987).

In summary, during their annual migrations adults and smolts of all four anadromous salmonid species would likely pass the subject gravel bars during the proposed aggregate excavation period. No spawning habitat for any of the species occurs at or downstream of the bars. Some juvenile rearing habitat is present in the Rogue and Chetco River estuaries, especially for SONCC chinook salmon and KMP steelhead; some rearing habitat for both adult and juvenile SOCC cutthroat trout is also present. Essential features of the migratory and rearing habitat for adults and juveniles of all four species are: (1) substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions. The essential features the proposed project may affect are substrate, water quality, water temperature, cover/shelter, food, riparian vegetation, and safe passage conditions.

IV. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 C.F.R. Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of (1) defining the biological requirements and current status of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to (1) collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives to the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' proposed or designated critical habitat. NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat, it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for adult and juvenile migration of the listed salmonids under the existing environmental baseline.

A. Biological Requirements and Current Status

The first step in the method NMFS uses for applying the ESA standards of § 7 (a)(2) to listed salmonids is to determine the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NMFS starts with the documents used to make its determinations to list the particular species for ESA protection, and also considers new data available that is relevant to those determinations (see references in Sections I and III).

The relevant biological requirements are those necessary for the listed species to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stocks, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements of SONC coho salmon, SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout are increased migration and rearing survival and improved habitat characteristics that function to support successful migration and rearing. The current status of the affected listed species (SONC coho salmon), based upon its risk of extinction, has not significantly improved since this species was listed. The status of the other three species has also not significantly changed since their "not warranted" determinations were made.

B. Environmental Baseline

The biological requirements of the listed species is not currently being met under the environmental baseline. Its status is such that there must be a significant improvement in the environmental conditions they experience, including the condition of any proposed or designated critical habitat (over those currently available under the environmental baseline). Any further degradation of these conditions would have a significant impact due to the amount of risk the listed salmon presently face under the environmental baseline.

Current range-wide status of affected species under environmental baseline. NMFS described the current population status of the SONC coho salmon, SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout in their status reviews (Weitkamp *et al.* 1995; Myers, *et al.* 1998, Busby *et al.* 1994, and Johnson *et al.* 1999, respectively), and in the SONC coho and SONCC chinook salmon and KMP steelhead final rules (62 FR 24588, 64 FR 50394, and 63 FR 13367) and the SONCC chinook salmon proposed rule (63 FR 11482). Critical habitat for SONC coho salmon was designated by the NMFS on May 5, 1999 (64 FR 24049). The recent range-wide status of these species are also summarized in NMFS (1997b).

Current status of affected species under environmental baseline within the action area. The action area is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR 402.02). The action area can be defined as the mainstem Rogue and Chetco Rivers downstream from the uppermost portions of the excavation sites; this area is within proposed critical habitat for SONC coho salmon. No effects of the action are expected either upstream of the excavation or in the Pacific Ocean.

V. Analysis of Effects

A. Effects of Proposed Action

The principal potential effects of the proposed action to SONC coho salmon, SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout, and SONC coho salmon critical habitat are related to the possible direct injury or mortality to individual juvenile fish because of mechanical injury or removal from the water by excavation or hauling equipment. Additionally, it is possible that fish may become trapped in trenches, pits, or depressions during water surface elevation fluctuations and be killed or injured through desiccation, predation, or inadequate water quality. Also, the removal of stream substrate, creation of turbidity and sedimentation, and the possible introduction of toxic substances into the rivers also have the potential to adversely affect the species of concern and their habitat.

While the COE proposes to allow dredging during the October 1 through May 31 period, the effects analysis below encompasses possible effects throughout the year. The NMFS, in a conservation recommendation in this BO (see section VII., below), advocates that the aggregate excavation season for these sites be shifted to the summer and early fall, when high streamflow levels are less likely than during the proposed excavation season.

1. Direct injury. The proposed activities have the potential to directly affect individuals of the species of interest through contact with equipment or manipulated aggregate. While Tidewater does not propose to remove aggregate within the flowing channel of the river and fish should not be able to gain access to active excavation areas (because of berms or other structures or because some areas are above tidal influence), it is still possible for fish to interact with Tidewater's equipment or bar modifications. In particular, almost all of the excavation/hauling areas at both the Rogue River and Chetco River sites would be inundated by high river flows, typically during the winter and spring, which is also the proposed gravel extraction period. When the water level recedes on these bars, fish and other aquatic animals could remain in the pit, trenches, and scalping area depressions which could expose these fish to the direct injury during excavation. The escape channels/leave strip breaching that the COE proposes to require of Tidewater should permit fish to leave these areas after excavation is completed for the season, but does not address the potential for fish to gain access to the excavation areas during the work season. Hauling of aggregate from excavation to upland storage site also has the potential to directly injure fish, especially at the Rogue River bar.

Specifically, if fish occur in trenches, depressions, etc. in the excavation areas, they could come in contact with the excavator bucket when it is extended and lifted. Fish in the path of the bucket could be struck during its deployment or retrieval, or crushed by the pressure of the bucket on the aggregate, or captured within the bucket and dumped in a pile or in a truck with the aggregate. Any of these scenarios would likely cause injury or death to the affected fish. Similar crushing is possible by the wheels of trucks hauling aggregate or the wheels or tracks of excavators traveling across recently inundated bars or areas of shallow water. Fish could also be crushed or smothered if Tidewater piles gravel on top of water-filled depressions. Finally, the disturbance caused by aggregate extraction from the pit or trenches could cause physiological stress to salmonids trapped in the pit or trenches—possibly enough stress to lower the likelihood of survival of those individuals.

It is difficult to determine the likelihood of direct injury or mortality that would be caused by the gravel extraction, but it seems likely that such occurrences would be rare. All life stages of anadromous salmonids are subject to the effects of fluctuating water levels and so there is likely a strong selective pressure for avoidance of depressions that could trap individuals as water levels recede. However, stranding, especially of relatively weak-swimming fry, occurs even in unaltered systems so it is likely that some individual SONC coho salmon, SONCC chinook salmon, KMP steelhead, and/or SOCC cutthroat trout are likely to occur in the depressions created by Tidewater. Even if some individuals are stranded, side channels, oxbows, and tidal flats are naturally occurring analogs of the proposed project sites, so migrating and rearing salmonids in the Rogue and Chetco estuaries likely have the ability to survive in the excavation depressions that would be created during Tidewater's aggregate extraction, especially during the cooler seasons when the actions are proposed (lower metabolism, more dissolved oxygen). Adults and large parr and smolts (greater than about 100 mm in length) of these species are probably strong enough swimmers to avoid entrapment in the minor depressions created by excavator and truck movements, but the larger individuals would likely occur in the Chetco River pit and the Rogue River trenches. The scalping area on the Rogue River "island" would not be excavated to below MLLW, and so would not retain water of substantial depth.

The NMFS anticipates that the reasonable and prudent measures that the COE will be required to take in this action (see section X. B. 2. and 3., below) should further reduce the likelihood of direct injury to anadromous salmonids. If implemented, the conservation recommendation (section VII., below) made to the COE by the NMFS should virtually eliminate the chances of direct adverse effects to the subject species.

2. Trapping. As noted above, when the water recedes, fish that enter excavation areas during high tides or flows could become trapped within the pit, trenches, or depressions created by Tidewater. Because the elevation of the water table of the gravel bars would mirror the fluctuations of the surface elevation of the Rogue and Chetco estuaries, once the proposed pit and trenches are excavated to below MLLW, fish trapped in these areas could not become stranded out of the water. On the other hand, relatively shallow depressions above MLLW created by Tidewater excavation (especially by bar scalping), as well as vehicle ruts and other incidental bar modifications, have the potential to trap fish in pools that would become dewatered (or nearly so) as the tide or river flow recedes. Fish within depressions which become fully dewatered would smother within a few minutes of full air exposure. Fish in shallow depressions would also become very vulnerable to predation by gulls, ravens, raccoons, etc. Under some conditions, fish in shallow depressions would perish because of high water temperature, oxygen depletion, and other water quality factors.

3. Removal of substrate. Tidewater proposes to annually excavate and remove up to 100,000 cy of sand and gravel from each of the two bars, although it is likely that only 50,000 to 60,000 cy would actually be removed. Extraction of aggregate from the lower Rogue and Chetco Rivers has the potential to change the attributes of riverbed and estuarine substrate (at least temporarily) and to affect river bottom contours. Because substrate type and water depth are components of the physical environment in which the salmonid species of interest exist, it is possible that the loss of aggregate in the lower Umpqua River may affect these species.

The most common fisheries concern related to aggregate mining from stream channels is loss of spawning habitat. In addition, as noted above, interstices between large substrate particles can provide cover for juvenile salmonids. In many streams, large substrate (chiefly boulders and cobble) provides stream bottom roughness, forming areas of hydraulic shelter for adult and juvenile salmonids. Substrate of all sizes provides habitat for benthic organisms, which are a major part of the lower Rogue and Chetco food web. Regarding changes in stream bottom depth caused by aggregate excavation, individual salmonids may prefer to be in water of particular depths, depending on such factors as life stage, diel patterns, turbidity, predation, etc. For example, juvenile fall chinook salmon in the lower Snake River initially prefer shallow (<20 feet in depth) areas near shore during rearing, but eventually move offshore into deeper water, possibly in conjunction with smolting (Bennett *et al.* 1993).

As noted above, spawning habitat loss is not a concern in the action area and it also seems unlikely that SONC coho salmon, KMP steelhead, or SOCC cutthroat trout fry or small parr would use the action area to any significant extent. While aggregate excavation is likely to remove substrate used as cover by SONCC chinook salmon fry as well as larger coho, steelhead, and cutthroat smolts or parr, the

composition of the substrate in the action area should not change substantially, as a large majority of the action areas will not be excavated, and, even on the two bars to be excavated, substrate similar to that removed will still occur on the bars after the excavation.

Regarding changes in river and estuarine depth due to aggregate excavation, it is not clear that substantial long-term effects are inevitable in the lower Rogue or Chetco Rivers as a result of this action. Theoretically, the aggregate removed by Tidewater may cause the average high-water depth of the action area to be greater by a slight amount over the 3-year term of the proposed permit. It is not certain that an increase in average depth will occur, however, because the speed of recruitment of new gravel to the Rogue and Chetco intertidal zones from upstream, as well as the relative importance of the pertinent mechanisms, is essentially unknown. On the other hand, Tidewater and its predecessors have been removing aggregate from both sites for several decades without obvious effects on river morphology. Tidewater believes that the annual recruitment of aggregate on the bars equals or exceeds that extracted in the previous year. The additional cross-sectional monitoring that is included in the reasonable and prudent measures that the COE will be required to take in this action (see section X. B. 1., below) may provide a better understanding of the long-term consequences of the proposed action on river morphology.

Specific to effects on the species of interest, the COE has proposed conditions that would prevent excavation within 50 feet of the MLLW shoreline, so it appears that both deep and shallow water habitat for these species will be preserved; individuals of the species should be able to find sufficient suitable areas for migration, rearing, etc. It is possible that long-term changes in river depth (should they occur) could alter conditions for both predators and prey of anadromous salmonids, but the ultimate effects on the species of interest are speculative, and are likely to be minor over the short-term.

4. Turbidity and Sedimentation. Fine sediment in the subject river bars will be mobilized into the Rogue and Chetco Rivers when the bars are inundated by high river flow volume. When this sediment is disturbed by excavation, hauling, etc., it may be more likely to mobilize into the water column than in its previously state. In addition, high levels of suspended sediment are likely to occur in Tidewater's proposed pit and trenches during excavation; water from the pit and trenches may enter the rivers through fish escape channels, leave area breaching, or inundation. Thus, while excavation and hauling would create turbidity (suspended sediments), no additional input of sediment to the river is likely to occur because of the proposed action.

At moderate levels, turbidity has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Fine redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce cover for juvenile salmonids (Bjornn and Reiser 1991).

In the proposed action, the primary mode of turbidity production would be the transport of fine sediments at high river flow levels when berms or other isolation structures are overtopped and excavation areas are inundated. Because ambient turbidity at high flow levels is often high, because the fine sediments are already within the river channels, and because the area disturbed by the proposed

actions would constitute a tiny proportion of the fine sediment within the river channels, the NMFS expects that any increase in turbidity caused by the actions would have a negligible effect on the baseline level of turbidity in the Rogue and Chetco Rivers during high flow events. The negligible effect on turbidity would translate into essentially no effect to primary and secondary productivity.

It is possible that plumes of turbidity may enter the Rogue and Chetco Rivers from fish escape channels and breaches during periods of relatively low flow. While such plumes would likely be more noticeable than turbidity generated during high flow events, the relative volume of suspended material in these plumes would be much less. As any turbidity from a channel or breach is likely to be localized, intermittent, and light, the total effect on benthic productivity in the Rogue and Chetco estuaries is likely to be low.

Although turbidity has some potential to directly adversely affect fish, this usually occurs in situations where no relief from the turbidity is possible. As noted above, during high flows the increase in turbidity in the Rogue and Chetco estuaries due to the proposed actions would be negligibly more than ambient turbidity. At low flows, adult and juvenile salmonids would have the opportunity to move out of isolated turbidity plumes created by the proposed action, so no direct adverse effect is likely. Also, indirect effects of turbidity on the species of concern, such as a reduction in prey availability, seem unlikely due to the small scale of the action's effect on benthic invertebrates compared to the effects of other human-caused and natural processes in the lower Rogue and Chetco Rivers. In addition, the COE is requiring, as a special condition of the 404 permit, that in-water work performed by Tidewater shall minimize turbidity. Redeposited sediments should have a similar negligible effect on salmonids because no spawning would occur in the estuaries and because of the small scale of potential indirect effects.

On the other hand, fish trapped within the Chetco bar pit or the Rogue bar trenches during active excavation are likely to be exposed to substantially turbid water which they would not be able to evade for up to several hours. Under the worst circumstances, turbidity in the pit or trenches could cause permanent injury or death.

5. Toxic contamination. Operation of the excavators, front-end loaders, and trucks requires the use of fuel, lubricants, etc., which, if spilled into the lower Rogue or Chetco Rivers, could injure or kill aquatic organisms. The COE requires, as a condition of the proposed permit, that Tidewater take care to prevent any petroleum products, chemicals, or other deleterious materials from entering the water. Assuming that Tidewater meets this condition, it is unlikely that a substantial spill would occur. Even if a spill of a toxic material were to occur, it would likely be in an area which is usually or often dry, so that Tidewater could clean up the majority of the spill before it reaches flowing water. In addition, both the Rogue and Chetco are streams of substantial flow volume, so rapid dilution of the substance to a non-lethal level for anadromous salmonids is likely.

B. Effects of Interrelated and Interdependent Actions.

Interrelated and interdependent actions are those that would not occur but for the proposed action. Tidewater sells the aggregate it excavates chiefly for use in construction of buildings, roads, etc. There

are many companies in southwest Oregon that sell rock for construction purposes; the aggregate is mined from streams or upland deposits or is blasted from quarries and crushed. Therefore, although it is possible that some of the aggregate excavated by Tidewater from the lower Rogue and Chetco River would be used in construction projects that might adversely affect the species of interest, aggregate from other sources would be available whether the 404 permit is issued or not. Thus, the proposed action would not result in actions that would not otherwise occur.

C. Cumulative Effects.

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area for this consultation is the lower Rogue and Chetco Rivers at and downstream of the subject gravel bars. Future Federal actions, including land management activities, are being (or have been) reviewed through separate section 7 consultation processes. In addition, non-Federal actions that require authorization under section 10 of the ESA will be evaluated in section 7 consultations. Therefore, these actions are not considered cumulative to the proposed action. NMFS is not aware of any future new, or changes to existing, State and private activities within the action area that would cause greater impacts to listed species than presently occurs. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

VI. Conclusion

The NMFS has determined that based on the available information, permitting of Tidewater's proposed aggregate excavation from the lower Rogue and Chetco Rivers under Section 404(b)(1) of the Clean Water Act is not likely to jeopardize the continued existence of SONC coho salmon or result in the destruction or adverse modification of designated critical habitat for SONC coho salmon. NMFS used the best available scientific and commercial data to apply its jeopardy analysis (described in NMFS 1997a, 1999), when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline (described in NMFS 1997b), together with cumulative effects. The effects of the proposed action on SONCC chinook salmon, KMP steelhead, and SOCC cutthroat trout and their habitat would be similar to the effects on SONC coho salmon.

In reaching this conclusion, NMFS determined that the survival and recovery of SONC coho salmon would not be appreciably diminished by the proposed action. This conclusion was reached primarily because: (1) The proposed action would likely cause minor, short-term decreases in water quality but the effects on the essential features of SONC coho salmon habitat are expected to be negligible; (2) direct disturbance of SONC coho salmon due to noise, etc. would be minimal due to the small area of the aggregate excavation operation compared to the remainder of the lower Rogue and Chetco Rivers; and (3) direct mortality from contact with the excavation and hauling equipment, etc. should be rare because of measures taken to prevent salmonids from coming into contact with equipment and because most individual salmonids coming into proximity of the dredge should be aware and agile enough to avoid injury.

The NMFS also applies this no jeopardy conclusion to aggregate excavation operations which otherwise follow the specifics of the proposed action and the Incidental Take Statement, below, but which would occur outside of the proposed annual aggregate excavation period. In the long-term, the information on river morphology developed through Tidewater's monitoring plan will allow a better assessment of the effects of the aggregate excavation on anadromous salmonids and other aquatic organisms.

VII. Conservation Recommendation

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NMFS believes the following conservation recommendation is consistent with these obligations and therefore should be implemented by the COE:

1. The COE should permit and encourage Tidewater to shift its aggregate excavation to the summer (approximately June-September) time period, so that the low likelihood of high river flows during this period should further reduce the possibility of adverse effects to anadromous salmonids because of interaction with excavation equipment and bar modifications.

VIII. Reinitiation of Consultation

Based on the information provided, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Biological Opinion. To ensure protection for a species assigned an unquantifiable level of take, reinitiation of consultation is required if: (1) Any action is modified in a way that causes an effect on the listed species that was not previously considered in the information provided and this Biological Opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

IX. References

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this opinion, in addition to the BA.

Bennett, D.H., T.H. Dresser Jr., T.S. Curet, K.B. Lepla, and M.A. Madsen. 1993. Monitoring fish community activity at disposal and reference sites in Lower Granite reservoir, Idaho-Washington, Year 4. Department of Fish and Wildlife Resources, University of Idaho, Moscow, Idaho.

- Bjornn, T.C., and D.W. Reiser. 1991. Habitat requirements of salmonids in streams. American Fisheries Society Special Publication 19:83-138.
- Busby, P.J., T.C. Wainright, G.J. Bryant, L.J. Liehr, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status review of West Coast steelhead from Washington, Idaho, Oregon, and California. National Marine Fisheries Service, Coastal Zone and Estuarine Studies Division, Seattle, Washington and Protected Species Management Division, Long Beach, California.
- Giger, R.D. 1972. Ecology and management of coastal cutthroat trout in Oregon. Oregon State Game Commission, Fishery Research Report 6.
- Johnson, O.W., R.S. Waples, T.C. Wainwright, K.G. Neely, F. W. Waknitz, and L. T. Parker. 1994. Status review of Oregon's Umpqua River sea-run cutthroat trout. National Marine Fisheries Service, Coastal Zone and Estuarine Studies Division, Seattle, Washington.
- Johnson, O.W., M.H. Ruckelshaus, W.S. Grant, F. W. Waknitz, A.M. Garrett, G.J. Bryant, K.G. Neely, and J.J. Hard. 1999. Status review of coastal cutthroat trout from Washington, Oregon, and California. National Marine Fisheries Service, Coastal Zone and Estuarine Studies Division, Seattle, Washington.
- Lowry, G.R. 1965. Movement of cutthroat trout, *Salmo clarki clarki* (Richardson), in three Oregon coastal streams. Transactions of the American Fisheries Society 94(4):334-338.
- Myers, J.M., R.G. Kope, G.J. Bryant, D.J. Teel, L.J. Liehr, T.C. Wainwright, W.S. Grant, F.W. Waknitz, K.G. Neely, S.T. Lindley, and R.S. Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, Washington.
- National Marine Fisheries Service (NMFS). 1997a. Application of Endangered Species Act standards to: Umpqua River cutthroat trout, Oregon Coast coho salmon, Southern Oregon/Northern California coho salmon, Oregon Coast steelhead, Klamath Mountain Province steelhead, Lower Columbia steelhead, chum salmon, chinook salmon, and sea-run cutthroat trout. NMFS, Northwest Region, Seattle, Washington. February, 1997.
- National Marine Fisheries Service (NMFS). 1997b. Biological requirements and status under 1996 environmental baseline: Umpqua River cutthroat trout, Oregon Coast coho salmon, Oregon Coast steelhead, Southern Oregon/Northern California coho salmon, Klamath Mountain Province steelhead, Lower Columbia steelhead, and chum salmon. NMFS, Northwest Region, Seattle, Washington. September, 1997.
- National Marine Fisheries Service (NMFS). 1999. The habitat approach: implementation of Section 7 of the Endangered Species Act for actions affecting the habitat of Pacific anadromous salmonids. NMFS, Northwest Region, Habitat Conservation and Protected Resources Divisions, Portland, Oregon. August 1999.

- ODFW (Oregon Department of Fish and Wildlife). 1990. Rogue basin fisheries evaluation: effects of Lost Creek Dam on winter steelhead in the Rogue River. Phase II completion report. U.S. Army Corps of Engineers contract DACW57-77-C-0033, Portland, Oregon.
- ODFW (Oregon Department of Fish and Wildlife). 1991. Rogue basin fisheries evaluation: effects of Lost Creek Dam on coho salmon in the Rogue River. Phase II completion report. U.S. Army Corps of Engineers contract DACW57-77-C-0033, Portland, Oregon.
- ODFW (Oregon Department of Fish and Wildlife). 1992. Rogue basin fisheries evaluation: effects of Lost Creek Dam on fall chinook salmon in the Rogue River. Phase II completion report. U.S. Army Corps of Engineers contract DACW57-77-C-0033, Portland, Oregon.
- ODFW (Oregon Department of Fish and Wildlife). 1994. Rogue basin fisheries evaluation: effects of Lost Creek Dam on summer steelhead in the Rogue River. Phase II completion report. U.S. Army Corps of Engineers contract DACW57-77-C-0033, Portland, Oregon.
- Spence, B.C., G.A. Lomnický, R.M. Hughes, and R.P. Novitzki. 1996. An ecosystem approach to salmonid conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, Oregon.
- Sumner, F.H. 1972. A contribution to the life history of the cutthroat trout in Oregon. Oregon State Game Commission, Corvallis, OR.
- Trotter, P.C. 1987. Cutthroat: native trout of the West. Colorado Associated University Press, Boulder.
- Weitkamp, L.A., T.C. Wainwright, G.J. Bryant, G.B. Milner, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status review of coho salmon from Washington, Oregon, and California. National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, Washington.

X. Incidental Take Statement

Sections 4(d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS anticipates that the action covered by this Biological Opinion—permitting of excavation of aggregate from the lower Rogue and Chetco Rivers—has more than a negligible likelihood of resulting in incidental take of SONC coho salmon because of the potential for direct incidental take during or because of extraction of aggregate from areas to which individuals of this species may have access. Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on the species' habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the actions covered by this Biological Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as unquantifiable. Based on the information provided, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Biological Opinion. The adverse effects of the actions, however, should be confined to the lower Rogue and Chetco Rivers.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize the take of listed and proposed species and/or to minimize the adverse modification of designated or proposed critical habitat:

1. Measures shall be taken to ensure that gravel extraction is conducted on a sustained-yield basis, and that channel degradation or adverse impacts to anadromous fish habitat do not result from operations permitted by the COE.
2. Measures shall be taken to ensure that SONC coho salmon are not directly affected by aggregate excavation in the estuarine intertidal zone.
3. Measures shall be taken to minimize the direct and indirect effects of aggregate excavation on SONC coho salmon in areas periodically inundated because of high river flow volume.
4. Measures shall be taken to quantify the extent of direct take of SONC coho salmon due to gravel extraction.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the COE is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

- 1.a. The COE shall ensure that all general and specific conditions placed on the 404(b)(1) permit by the COE will be implemented by Tidewater.
- 1.b. Within 3 months of the issuance of this biological opinion, the COE shall submit river channel monitoring plans for review by the NMFS and ODFW. The plans will detail how Tidewater proposes to conduct monitoring of the geomorphology of the Rogue and Chetco River channels potentially affected by the proposed gravel extraction. Specifically, implementation of the monitoring plans should allow the COE, NMFS, and ODFW to assess the effects of the proposed actions on river width, depth, substrate composition, and bank erosion at, above, and below the extraction sites. Possible methods for documenting changes/stability in river geomorphology include permanent cross-sectional surveys and periodic aerial photos. The monitoring plans should also specify the form and frequency of data collection and reporting. Upon approval of the monitoring plan by the NMFS and ODFW, the COE shall ensure that Tidewater collects, analyzes, and reports the results of the monitoring to the COE, NMFS, and ODFW at agreed-upon frequencies.
- 2.a. The COE shall prohibit Tidewater from operating excavation equipment and gravel hauling trucks in standing or flowing water within intertidal zones. In particular, Tidewater shall be prohibited from driving gravel trucks and excavators from the north shore of the Rogue River site to the scalping “island” except at low tide. The COE shall ensure that any equipment that Tidewater operates in or uses in crossing intertidal zones be clean and free from leakage to prevent sediment and contaminants from entering the Rogue or Chetco Rivers. Substantial ruts, which might contribute to fish stranding, in intertidal zones caused by excavator tracks or truck tires shall be smoothed prior to the next high tide.
- 3.a. The COE shall require Tidewater to construct and maintain fish escape channels leading downstream from any aggregate extraction area which is excavated below MLLW. The channels should allow any fish trapped in the extraction areas during high river flows (or other events that would allow fish access to the extraction areas) to escape these areas after water levels have receded.

To minimize the transmission of turbidity from the extraction areas to the rivers, and because the completion of an escape channel may require the breaching of a fish-exclusion berm, Tidewater should construct an interrupted channel (i.e., one with an nonexcavated section) at the initiation of aggregate removal at a site and/or prior to likely high-flow periods. The channel should be completed (by joining the previously interrupted channel sections and/or breaching the berm) only when inundation of the area by high flows is imminent, or when aggregate extraction at a particular pit or trench has been completed or suspended. To reduce transmission of suspended sediments from the excavation areas to the rivers, Tidewater should minimize the amount of material to be excavated in the final connection to the river and, if flow and safety conditions permit, allow suspended sediment to settle completely in the pit or trench prior to channel connection.

The bottom elevation of the fish escape channels should be no less than 1 foot below MLLW and should be directly connected to the Rogue or Chetco river at MLLW; the channels should

also be a minimum of 2 feet in width at bottom. The escape channels shall be examined and maintained within 24 hours of receding flows, unless rapidly fluctuating flow conditions or other factors would endanger the safety of inspectors/ equipment operators. The escape channels at each site should be maintained until sufficient material has recruited to the excavation areas to fill these areas to or above the MLLW elevation; the escape channels, if still extant, should be filled/graded to or above the MLLW elevation when no longer useful.

Pits or trenches which are overtopped by high river flows or other events shall not be further excavated (except to allow fish to escape). Only after natural deposition or bar movement has filled-in or otherwise eliminated depressions shall the sites of the previous pits or trenches be subject to aggregate extraction.

- 3.b. The COE shall ensure that Tidewater smooths and slopes the “island” portion of the Rogue River bar after scalping to minimize the likelihood of fish stranding following inundation by high river flows. Smoothing and sloping should be performed within a week of the completion or suspension of scalping operations. The scalped area should be sloped downstream and toward the main river channel (south); material in the 50-foot buffer strip may be used to smooth the extraction area on the “island.”
- 3.c. The COE shall ensure that Tidewater does not remove any woody vegetation, including willows, growing in the excavation areas. Any large woody material (transported by water to the bars) disturbed or excavated at the sites shall be relocated to another site on the bar, so that it can continue to interact with the biotic and abiotic components of the estuaries.
4. Any stranding, injury, or mortality to salmonids observed by Tidewater as a result of its aggregate operation on the Rogue and Chetco Rivers shall be reported to the NMFS’ Roseburg Field Office within 7 days. In addition, Tidewater shall freeze or preserve (in 70% isopropyl alcohol) the carcasses of any salmonids discovered in the gravel extraction areas to allow species identification by the Roseburg Field Office. Close-up photos of salmonid carcasses that permit species identification may be substituted for the frozen or preserved carcasses.